



**BSI Standards Publication**

## **Test methods for repair materials for water-leakage cracks in underground concrete structures**

---

Part 3: Test method for water (wash out) resistance

This is a preview of "PD ISO/TS 16774-3:20...". [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This Published Document is the UK implementation of ISO/TS 16774-3:2023.

The UK participation in its preparation was entrusted to Technical Committee B/517/8, Protection and repair of concrete structures.

A list of organizations represented on this committee can be obtained on request to its committee manager.

### Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2023  
Published by BSI Standards Limited 2023

ISBN 978 0 539 13726 2

ICS 91.080.40

### **Compliance with a Published Document cannot confer immunity from legal obligations.**

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2023.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

This is a preview of "PD ISO/TS 16774-3:20...". [Click here to purchase the full version from the ANSI store.](#)

Second edition  
2023-04-24

---

---

## Test methods for repair materials for water-leakage cracks in underground concrete structures —

### Part 3: Test method for water (wash out) resistance

*Méthodes d'essai pour matériaux de réparation pour fissures dues à  
l'eau dans les structures en béton souterraines —*

*Partie 3: Méthode d'essai de la résistance à l'eau (de lixiviation)*



Reference number  
ISO/TS 16774-3:2023(E)

© ISO 2023

This is a preview of "PD ISO/TS 16774-3:20...". Click here to purchase the full version from the ANSI store.



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2023, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

This is a preview of "PD ISO/TS 16774-3:20...". Click here to purchase the full version from the ANSI store.

## Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>1</b>
<b>5 Apparatus</b> .....	<b>2</b>
5.2 Others.....	<b>2</b>
<b>6 Preparation</b> .....	<b>2</b>
6.1 Test specimens.....	<b>2</b>
6.2 Ambient conditions.....	<b>2</b>
<b>7 Procedure</b> .....	<b>2</b>
<b>8 Expression of results</b> .....	<b>3</b>
<b>9 Test report</b> .....	<b>3</b>
9.1 Information on the repair material of the test target.....	<b>3</b>
9.1.1 General.....	<b>3</b>
9.1.2 Other information.....	<b>3</b>
9.2 Information on the test.....	<b>4</b>
<b>Annex A (informative) Example test method</b> .....	<b>5</b>
<b>Bibliography</b> .....	<b>8</b>

This is a preview of "PD ISO/TS 16774-3:20...". Click here to purchase the full version from the ANSI store.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 7, *Maintenance and repair of concrete structures*.

This second edition cancels and replaces the first edition (ISO/TS 16774-3:2016) which has been technically revised.

The main changes are as follows:

- ambient conditions in [6.2](#) and [A.3.2](#) have been modified;
- some clarifications have been made in [Clause 7](#) and [9.2](#);
- some editorial corrections have been made.

A list of all parts in the ISO 16774 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

This is a preview of "PD ISO/TS 16774-3:20...". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

This document is linked to ISO/TR 16475. ISO/TR 16475 outlines six basic properties and the required performance levels of water leakage repair materials, and the ISO/TS 16774 series proposes sample testing methods that are capable of evaluating the respective properties of the repair materials.

The test methods in this document are intended to serve as references for nations that have not yet developed a test method on the six required performance properties of water leakage repair materials. If other forms of test methods that are simpler, more accurate or more organized are available, such methods are recommended for use instead. Many of the dependent variables outlined in the reference test methods of this document are subject to change in accordance with the environmental conditions (temperature and humidity, chemical solution and concentration, width of movement activity, water pressure or water flow velocity, etc.) outlined in the standards used in respective countries.

For ISO/TS 16774-1, ISO/TS 16774-5 and ISO/TS 16774-6, for the purpose of objectively comparing the performance of injected repair materials, artificial cracks of same width, height, and volume were used to control the usage of repair materials for each testing cycle and enable repetition of the same test methods under the same conditions.

This is a preview of "PD ISO/TS 16774-3:20...". [Click here to purchase the full version from the ANSI store.](#)



This is a preview of "PD ISO/TS 16774-3:20...". Click here to purchase the full version from the ANSI store.

# Test methods for repair materials for water-leakage cracks in underground concrete structures —

## Part 3: Test method for water (wash out) resistance

### 1 Scope

This document specifies a laboratory test method on the quantitative determination of repair materials performance and resistance against erosion and wash out due to underground water flow.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TR 16475, *General practices for the repair of water-leakage cracks in concrete structures*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 16475 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1

##### **water leakage repair material**

grouting materials used to prevent water leakages in concrete cracks

Note 1 to entry: In this document, target ingredients are limited to injection materials outlined in ISO/TR 16475.

[SOURCE: ISO/TS 16774-2:2023, 3.1]

### 4 Principle

Resistance to water flow is one of the fundamental properties that water leakage repair materials should possess. Repair materials are, in most cases, under constant pressure due to water flow, meaning there are risks of erosion, and/or washout and eventual reopening of leakage paths. This test method evaluates the performance of repair materials for water-leakage cracks by observing how closely the materials can maintain their original state after being exposed to long term water flow. This is done by comparing the mass difference of water leakage repair materials before and after flow testing in order to determine the repair material's wash out resistance. An example test method is provided in [Annex A](#).

The test repair material is placed in a Petri dish container, which is then placed under exposure to water flow for predetermined duration in a water flow chamber apparatus (flow velocity, duration of flow testing and other relevant conditions are subject to change in accordance with regulated values and figures outlined in different national standards). The mass of the test specimen prior to and after the